Economic analysis of adjuvant interferon alfa-2b in high-risk melanoma based on projections from Eastern Cooperative Oncology Group 1684

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Adjuvant Interferon Alfa-2b (IFN) for treating high-risk melanoma.

Type of intervention
Treatment.

Economic study type
Cost-utility analysis.

Study population
Newly diagnosed resectable primary cutaneous melanoma patients, (mean age of 50), with no other life-threatening medical conditions, and no evidence of metastatic disease.

Setting
Hospital. The economic study was carried out in the USA.

Dates to which data relate
The data for the effectiveness analysis were collected during the period 1989-96. 1996 prices were used.

Source of effectiveness data
The evidence for final outcomes was based on a review of previously completed studies and authors’ assumptions.

Modelling
Using a Markov process, a model of the prognosis of patients from an earlier trial was developed, and the patients were ‘followed up’ as a large cohort over time (35 years). The model calculated the cumulative value of outcomes for the patients based on combining actual observed recurrence events and projections.

Outcomes assessed in the review
Relapse-free survival rate was used as the outcome measure by the authors, as determined by the assessment made in the primary study.

Study designs and other criteria for inclusion in the review
Not stated.
Sources searched to identify primary studies
Not stated.

Criteria used to ensure the validity of primary studies
Not stated.

Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
Five studies and two databases.

Methods of combining primary studies
Narrative method.

Investigation of differences between primary studies
Not stated.

Results of the review
The 5-year relapse-free survival rate on IFN was 37% versus 26% for observation and the 5-year survival rate was 46% on IFN compared with 37% on observation.

Methods used to derive estimates of effectiveness
Some of the estimates of effectiveness were based on the authors’ assumptions.

Estimates of effectiveness and key assumptions
The authors assumed that the average survival from relapse to death was constant over time.

Measure of benefits used in the economic analysis
Survival, life years gained and quality-adjusted survival were the outcomes used in the economic analysis.

Direct costs
Costs were discounted at a 3% discount rate. Only health care system costs were considered. Treatment costs were based on the 1996 wholesale price of IFN and expert panel estimates of all other treatment associated costs. This included all professional, nursing and laboratory-monitoring costs, costs of scheduled visits required for treatment, and those necessitated by treatment toxicity, for patients until relapse. These costs were based, not on charges, but on costs using the projected frequency of these events in the trial as estimated by participants at two major study sites. Savings from avoiding recurrent melanoma treatment were estimated based on the opinion of an expert panel on a per month of care basis.

Indirect Costs
Not included.
Currency
US dollars ($).

Sensitivity analysis
One way sensitivity analyses were performed using different assumptions of treatment costs, natural history and quality-of-life values.

Estimated benefits used in the economic analysis
Using a 35-year perspective, the average patient gained almost two years in overall survival with IFN treatment (8.96 versus 7.06 years). When future benefits were adjusted to their present value by discounting, the survival benefit of IFN treatment decreased to 1.3 years. When quality-of-life adjustments were added, the benefit was 1.2 years. Using a 7-year perspective the average patient gained almost 0.52 years in overall survival with IFN treatment (3.99 versus 3.47 years). When future benefits were adjusted to their present value by discounting, the survival benefit of IFN treatment decreased to 0.46 years. When quality-of-life adjustments were added, the benefit was 0.35 years.

Cost results
The costs associated with IFN treatment were $28,636 per patient. The additional costs of IFN treatment exceeded the cost savings from avoiding treatment for melanoma recurrence by $15,076 at 7 years ($91,656 versus $76,580) and $18,123 ($105,479 versus $87,356) at 35 years.

Synthesis of costs and benefits
The incremental cost-effectiveness ratio was $32,600 per life year gained at 7 years and $13,700 at the proposed 35-year horizon. Quality-adjusted survival resulted in a cost-utility ratio of $43,200 per quality-adjusted life year using the 7-year horizon and $15,200 using the 35-year horizon. Sensitivity analyses changed the cost-effectiveness ratios by less than $2,000 per life-year using annual discount rates up to 7% per year. The cost-effectiveness ratios using recurrence-free survival were only slightly higher than the baseline analysis. Only under the extreme assumption of no recurrence treatment costs and a short time horizon did the cost-effectiveness ratio exceed $50,000 per year.

Authors’ conclusions
The authors concluded that adjuvant IFN therapy for high-risk melanoma was an effective therapy whose incremental cost-effectiveness at 7 years was similar to most medical-effective interventions. The therapeutic responses obtained with IFN would probably endure even longer. If this durability reflected cure, the cost-effectiveness ratio of IFN would progressively decline.

CRD COMMENTARY - Selection of comparators
The choice of the comparator was clear. You, as a database user, should consider it is applicable to your own setting.

Validity of estimate of measure of benefit
As there is no evidence of a systematic search of the literature, the extent to which all relevant studies were included cannot be assessed.

Validity of estimate of costs
As the authors indicated, this model bases the cost of IFN, not on observed individual patient costs, but on median dose received in a previously published trial and projections of associated treatment and toxicity costs. Resource quantities were not reported separately from costs.
Other issues
There is a need for future studies examining the cost-effectiveness of IFN.

Source of funding
Supported in part by an American Cancer Society Faculty Research Award (B E Hillner) from the American Cancer Society, Atlanta GA; an unrestricted grant from Integrated Therapeutics, Inc of Schering-Plough, Inc, Kenilworth NJ; and a Faculty Scholar AwardProject on Death in America, Open Society, New York, NY (T J Smith). Eastern Cooperative Oncology Group 1684 was performed with support from CA 186533, CA 07190 and CA 2115.

Bibliographic details

PubMedID
9196150

Indexing Status
Subject indexing assigned by NLM

MeSH
Cost-Benefit Analysis; Decision Support Techniques; Humans; Interferon-alpha /administration & dosage /adverse effects /economics; Markov Chains; Melanoma /economics /therapy; Middle Aged; Models, Econometric; Neoplasm Recurrence, Local /economics; Quality of Life; Recombinant Proteins; Risk Factors

AccessionNumber
21997000892

Date bibliographic record published
28/02/1999

Date abstract record published
28/02/1999